2827

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Bily WANG

Art unit: 2827

Serial No. 09/731,223

Examiner: MITCHELL, James M.

Filed: Dec.7, 2000

For: FOCUSING CUP ON A FOLDED FRAME FOR SURFACE MOUNT OPTOELECTRONIC SSEMICONDUCTOR PACKAGE

AMENDMENT (marked-up version)

Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450

Sir:

In response to USPTO communication dated June 3, 2003, please amend the application as follows:

IN THE CLAIMS:

Please rewrite claim 1 as follows:

1 (once amended) A method of fabricating a surface mount semiconductor device package with a focusing cup, comprising the steps of:

preforming folded substrateless metal frames, each having a top surface for contacting an electrode of a semiconductor device and bottom surface serving as a contact for surface mounting to a motherboard, and

casting glue over said metal frames to form a cup over said top surface for focusing light emitted from said semiconductor device without covering the area for contacting said electrode and to adhere to said top surface as a unitary structure.

2. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 1, wherein said folded substrateless metal frames are folded inward.

3. (once amended) [A] The method of surface mount semiconductor device package as described in claim 1, wherein said folded substrateless metal frames are folded outward .

4. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 1, wherein said semiconductor device is a diode.

5. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 1, wherein said cup is contoured to focus said light.

6. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 1, wherein said cup is lined with reflecting coating.

7. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 1, wherein the top surfaces of [said metal plates] said folded substrateless metal frames are shaped to mate with the bonding pads of the semiconductor device.

8. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 7, wherein the top surfaces of the [metal plates] folded substrateless metal frames are of same shape.

9. (once amended) [A] The method of fabricating a surface mount semiconductor device package as described in claim 7, wherein the top surfaces of the folded substrateless metal [plates] frames are of different shapes.

10. (once amended) A surface mount semiconductor device package fabricated by:

preforming folded substrateless metal frames, each having a top surface for contacting an electrode of a semiconductor device and bottom surface serving as a contact for surface mounting to a motherboard, and

casting glue over said folded substrateless metal frames to form a cup over said top surface for focusing light emitted from said semiconductor device without covering the area for contacting said electrode and to adhere to said top surface as a unitary structure.

REMARKS

Claims 1-3 and 7-10 have been rewritten.

The Examiner rejected claims 7-9 under 35 U.S.C. 112 as being indefinite, citing that "said metal plates" in line 2 of claim 7 have no antecedent basis. This rejection has been overcome by replacing "said metal plates" with --said metal frames-- which have antecedents.

The Examiner rejected claims 1, 2, 4-8 under 35 U.S.C. 102(e) as being anticipated by Applicant's Admitted Prior Art (APA). The prior art disclosed a metal frame, which folds over a substrate and mounts the semiconductor device. The overall thickness of the folded frame and the substrate is thick. Beside, the folding step in the prior as shown in Fig.2 to Fig.3 would damage the substrate between the metal and the plastic due to folding stress.This invention is a method to reduce the overall thickness by using a preformed metal frame without wrapping over a substrate in the process. Thus, by limiting the folded frame to be substrateless, i.e. without a substrate in claim 1 and claim 10, it is believed that

claims 1 and 10 are no longer anticipated. Since claims 2, 4-8 are dependent on claim 1, it follows that these dependent claims are also no longer anticipated.

The Examiner rejected claim 9 under 35 U.S.C. 103(a) as being unpatentable over APA as applied to claim 7. Since claim 7 has been amended to overcome the rejection and is believed to be no longer anticipated, it follows that claim 9 which depends on claim 7 is also no longer unpatentable.

The Examiner rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over APA in combination with PAI. Since claim 3 depends on claim 1, which has been rewritten to overcome the APA rejection, it follows that claim 3 is also no longer unpatentable.

In view of the above, it is submitted that claims 1-10, as amended, are in condition for allowance. Reexamination of the objection and rejections is requested. Allowance of claims 1-10 at an early date is solicited.

Respectfully submitted,

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